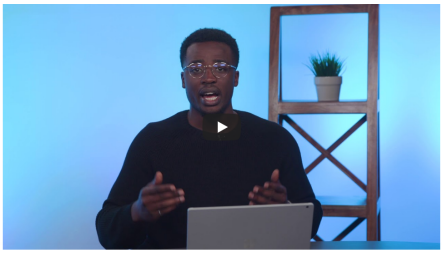
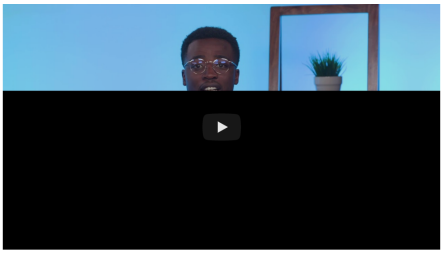
Basic Modeling

Training, evaluating, and selecting the right Machine Learning models is at the core of each modern data science process. But what concrete steps do we need to go through to produce a trained model? In this section, we'll look at some important parts of the process and how we can use Azure Machine Learning to carry them out.



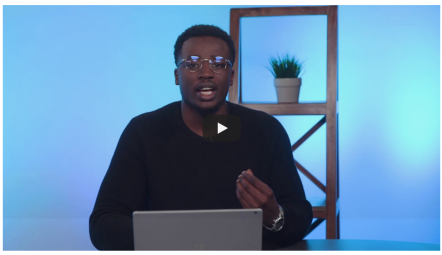
Experiments

Before you create a new *run*, you must first create an experiment. Remember, an **experiment** is a generic context for handling runs. Think about it as a logical entity you can use to organize your model training processes.



Runs

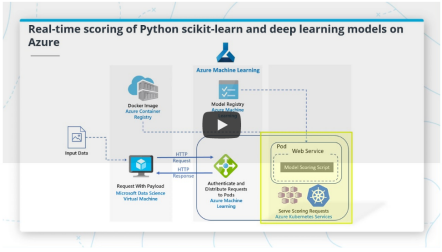
Once you have an experiment, you can create **runs** within that experiment. As we discussed above, model training runs are what you use to build the trained model. A run contains all artifacts associated with the training process, like output files, metrics, logs, and a snapshot of the directory that contains your scripts.



Models

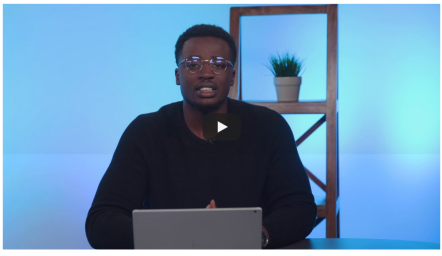
A run is used to produce a *model*. Essentially, a **model** is a piece of code that takes an input and produces output. To get a model, we start with a more general algorithm. By combining this algorithm with the training data—as well as by tuning the hyperparameters—we produce a more specific function that is optimized for the particular task we need to do. Put concisely:

> *Model = algorithm + data + hyperparameters*



Model Registry

Once we have a trained model, we can turn to the **model registry**, which keeps track of all models in an Azure Machine Learning workspace. Note that models are either produced by a Run or originate from outside of Azure Machine Learning (and are made available via model registration).



QUIZ QUESTION

When you train a model in Azure Machine Learning, there are a few steps you must perform, in a particular order. Which of these shows the correct order?

- Create a new run in code, create a new experiment after the run is completed, then register the trained model.
- Start out by creating a new registry for the model. Next, create a new experiment and add a run to it. The model is automatically associated to its registration.
- ✓ Create a new experiment for your runs. Submit a script run. After the run successfully completes, register the model.

SUBMIT

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